

Appln. Serial No. 09/675,357
Amendment Dated May 26, 2005
Reply to Office Action Mailed March 30, 2005

REMARKS

In the Office Action dated March 30, 2005, claims 2-4, 6-22, 24, 25, 28-34, and 37-55 were rejected under § 103 over U.S. Patent No. 5,845,113 (Swami) in view of U.S. Patent No. 5,369,764 (Blair).

It is respectfully submitted that the obviousness rejection of independent claim 7 is defective for at least the following reasons: (1) no motivation or suggestion existed to combine the teachings of Swami and Blair; and (2) even if they can be combined, the hypothetical combination of Swami and Blair fails to teach or suggest *all* elements of the claim. *See* M.P.E.P. § 2143 (8th ed., Rev. 2) at 2100-129.

Note that claim 7 recites the execution of a plurality of multi-phase parallel tasks, where each parallel task is executed in plural phases, and each parallel task provides a code to indicate if the task is to be re-invoked in the next phase. According to the Office Action, the multiple phases of each parallel task are equated to what is depicted in Figure 2 of Swami (corresponding to the passage at column 7, lines 34-49, cited by the Office Action).

However, as correctly conceded by the Office Action, Swami fails to disclose that each parallel task provides a code to indicate if the task is to be re-invoked in the next phase. Instead, reliance was made on Blair as teaching this missing element. The Office Action cited specifically to column 5, line 53-column 6, line 11 of Blair as teaching this particular element. It is respectfully submitted that the cited passage of Blair does not teach or suggest that each parallel task provides a code to indicate if the task is to be re-invoked in the next phase.

The cited passage of Blair refers to the restarting of a program that has been aborted due to error. "If at any point Program A aborts on an error, then all updates since the last checkpoint and prior to the error are rolled back or rendered ineffectual by the data base facility, the checkpoint restores the storage areas, registers and pointers, reconnection is established, and processing continues to a normal ending for the program." Blair, 6:5-11.

Thus, Blair is referring to aborting a program and restarting the program due to an error. The aborting and restarting of the program due to an error in Blair does not constitute providing a code by a task to re-invoke the task in the next phase of multiple phases of the parallel task.

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In response to Applicant's previous assertion that neither Swami nor Blair teaches the clause in claim 7 that each parallel task provides a code to indicate if the task is to be re-invoked in the next phase, the present Office Action stated that the code generated by Blair (in response to an error condition) "is applicable to any data processing system that has a need to restart tasks." 3/30/2005 Office Action at 19. However, there is absolutely no factual support found either in Blair or Swami for this contention, that the code provided by Blair in response to an error condition is applicable to the subject matter recited in claim 7 of the present application. As warned by the M.P.E.P., the "mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01, at 2100-131. There is no suggestion provided in either Swami or Blair that the code for error conditions taught by Blair can be modified for the purpose of indicating whether or not to re-invoke a parallel task in the next phase of plural phases. Thus, the present Office Action has failed to adequately address Applicant's previous arguments that Blair does not teach the last clause of claim 7. This defect in the application of Blair to claim 7, in combination with the concession made by the Office Action that Swami does not teach or suggest the last clause of claim 7, is a clear indication that the Office Action has failed to establish a *prima facie* case of obviousness with respect to claim 7.

A further defect in the obviousness rejection is that no motivation or suggestion existed to combine the teachings of Swami and Blair. Swami states that a coordinator site assigns separate tasks (gathering & distributing, sorting, merging, collecting) to different logical sites. Swami, 6:51-62. Storage sites gather and distribute data to sort sites, and sort sites perform local sorting of the distributed data. Swami, 6:63-7:8. At the command of the coordinator site, the merge site continuously collects the sorted data from the sort sites. Swami, 7:11-12. As the merge site merges the data, the merged data is sent to the sink site. Swami, 7:16-17. The data gathering and distributing, sorting, merging, and data sinking as performed in Swami is thus described as a continuous process that continues until all data has been processed. Swami, 7:18-20. There was absolutely no need or desirability to provide the different tasks of Swami with the ability to send codes to determine whether the task is to be re-invoked for the next phase of a multi-phase parallel task. It is well established law that "[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the

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desirability of the modification.” *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125 (Fed. Cir. 1984) (emphasis added). No suggestion (implicit or explicit) was provided in Swami, Blair, or any other cited prior art for modifying Swami to achieve the claimed invention.

In fact, the program abort and program restart process of Blair would have taught a person of ordinary skill in the art how a program error can be handled—no suggestion is provided by Blair that codes can be sent by the tasks to re-invoke the tasks for a next phase of a multiphase task. The present Office Action argued that Swami teaches repeating the I/O phase, sort phase, and return phase for an interval. 3/30/2005 Office Action at 19. The Office Action further stated that “[t]here is a risk of the task overrunning its interval and not completing properly.” *Id.* at 20. The Office Action then stated that “[i]f such an error were to occur, Blair provides an ideal remedy.” *Id.* There is no indication whatsoever in Swami that overrunning an interval is even a concern. In fact, in reviewing the pseudocode in column 8 of Swami cited by the Office Action, it is clear that there is no risk of overrunning an interval. The Office Action referred to the “do” loop that re-invokes tasks. *Id.* at 19. The “do” loop referred to by the Office Action is provided as step (14) at line 45 of column 8 of Swami. The “do” loop indicates that each sort site performs, in parallel, a “do” loop until there are no more tuples from storage sites. Thus, for each interval, each sort site sorts tuples received from the storage sites until *no more tuples* are received. It is impossible for there to be overrunning of an interval at the sort site, or at any other site in the database system of Swami. The sort site of Swami merely processes tuples until there are no more tuples to process. Thus, the risk of overrunning an interval is non-existent, and thus the statement made in the Office Action that there is a risk of overrunning an interval in Swami finds no factual support anywhere within Swami. Clearly, no desirability existed at the time of the present invention for incorporating the error codes of Blair into the system of Swami. Because no suggestion existed to modify Swami with the teachings of Blair, a *prima facie* case of obviousness has not been established for this additional reason.

Independent claims 15 and 38 are allowable over the references for similar reasons as for claim 7.

Dependent claims of claims 1, 15, and 38 are allowable for at least the same reasons as corresponding independent claims.

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Moreover, with respect to claim 8, which depends from claim 7, Blair does not teach that the code provided by each parallel task is provided to a task coordinator. In the cited passage in columns 5 and 6 of Blair, a program sends a checkpoint command that returns a code to indicate whether a restart is occurring, and if so, the program restarts. No mention is made that the code is sent to a task coordinator. Swami's teaching regarding interaction between the different logical sites, where storage sites send tuples to sort sites, the sort sites send tuples to a sink site, actually teaches away from using a task coordinator in the manner recited in claim 8. Claim 8 is therefore allowable for this additional reason. Claim 32, which depends indirectly from claim 28, and claim 39, which depends from claim 38, are similarly allowable.

With respect to newly added dependent claims 56-58 (which depend directly or indirectly from claim 8), there is no teaching in either Swami or Blair of re-invoking, by a task coordinator, a first one of parallel tasks in response to the first parallel task providing a first code indicating the first parallel task is to be re-invoked. Dependent claims 59-60, which depend directly or indirectly from claim 15, are allowable for similar reasons. Claim 61, which depends from claim 17, is also allowable for similar reasons.

Amended independent claim 11 now recites that a task coordinator determines whether an additional phase is required to execute multi-phase parallel tasks based on codes returned by the tasks to the task coordinator; and scheduling, by the task coordinator, an additional phase in response to the determination that an additional phase is required.

As discussed, in Swami, the sort sites process intervals until there are no more tuples from storage sites. In other words, whether the sort sites perform further processing is based on whether additional tuples are received. There is absolutely no need whatsoever for a task coordinator in Swami. Therefore, it is respectfully submitted that claim 11 is not obvious over Swami and Blair.

Independent claim 22 was also rejected as being obvious over Swami and Blair. Applicants respectfully disagree, as the hypothetical combination of Swami and Blair does not disclose a client system *separate* from the database system and coupled to the database system over the network, with the client system to establish *plural sessions* with the database system to implement a plurality of data operations upon the database system in parallel.

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The Office Action stated that Swami discloses a client system separate from a database system and coupled to the database system. 3/30/2005 Office Action at 9. However, the Office Action appeared to have implicitly conceded that Swami does not disclose the remaining features of the client system recited in claim 22, relying instead on Blair. The Office Action cited the following passage of Blair: column 5, line 53-column 6, line 11.

Blair does not teach or suggest that any client system is able to establish plural sessions with the database system to implement a plurality of data operations upon the database system in parallel. The passage in columns 5 and 6 of Blair cited by the Office Action refers to aborting and restarting a program—there is no teaching or suggestion of a client system, separate from and coupled to a database system over a network, that is able to establish plural sessions with the database system to implement a plurality of data operations upon the database system in parallel.

The Office Action further argued that Swami indicates that a separate client system is contemplated and is implicit within the disclosure of Swami. 3/30/2005 Office Action at 20. Applicant is not merely claiming the client system – Applicant is claiming a client system separate from the database system, where the client system is able to establish *plural sessions with a database system* to implement a plurality of data operations upon the database system in parallel. Even if a client system was present in Swami, there is absolutely no teaching whatsoever in Swami that such a client system would be able to establish plural sessions with a database system.

The Office Action further stated that client systems coupled to database systems over networks are well-known architectures for implementing database operations, and that “a plethora of prior art disclose such an architecture.” 3/30/2005 Office Action at 20. The issue is not whether client systems are known – the issue is whether a client system separate from a database system existed at the time of the present invention that was capable of establishing plural sessions with a database system to implement a plurality of data operations on the database system in parallel. The Office Action has clearly failed to produce a reference that taught such a client system.

Another statement made in the Office Action is that “both the claimed invention and Swami are primarily directed to methods of performing parallel data operations, not in how the user communicates a request.” 3/30/2005 Office Action at 20. This is a mischaracterization of

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the claimed invention. The claimed invention of claim 22 is directed to a client system separate from a database system that is able to establish plural sessions with the database system to implement a plurality of data operations upon the database system in parallel. Swami, and Blair as well, clearly fails to teach or suggest the subject matter of claim 22.

Therefore, even if Swami and Blair can be properly combined, the hypothetical combination of Swami and Blair does not teach or suggest all elements of claim 22. A *prima facie* case of obviousness has thus not been established with respect to claim 22 over Swami and Blair.


Independent claim 28 is similarly allowable over Swami. Claims dependent from claims 22 and 28 are allowable for at least the same reasons.

In view of the foregoing, allowance of all claims is respectfully requested.

The Commissioner is authorized to charge any additional fees and/or credit any overpayment to Deposit Account No. 14-0225 (9433).

Respectfully submitted,

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Dan C. Hu
Registration No. 40,025
TROP, PRUNER & HU, P.C.
8554 Katy Freeway, Suite 100
Houston, TX 77024
Telephone: (713) 468-8880
Facsimile: (713) 468-8883